

December 2004 Water Sampling

**Validation Data Package
for
Configuration 1 Interim Action
Well Field Monthly Sampling
Moab, Utah**

March 2005

Moab, Utah

December 15-16, 2004

Data Package Contents

This data package includes the following information:

<u>Item No.</u>	<u>Description of Contents</u>
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	Water Sampling Field Activities Verification Checklist
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Attachment 1—Data Presentation

Minimums and Maximums Report
Anomalous Data Review Checksheet
Water Quality Data
Water Level Data
Time Versus Concentration Graphs

Attachment 2—Trip Report

Sampling Event Summary

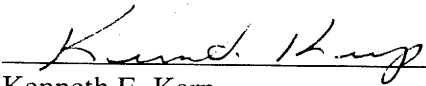
Site: Moab, Utah

Sampling Period: December 15-16, 2004

The purpose of this sampling was to collect data that can be used to evaluate the performance of Configuration 1 of the interim action well field. This is the eighth monthly performance sampling round conducted in 2004 for Configuration 1.

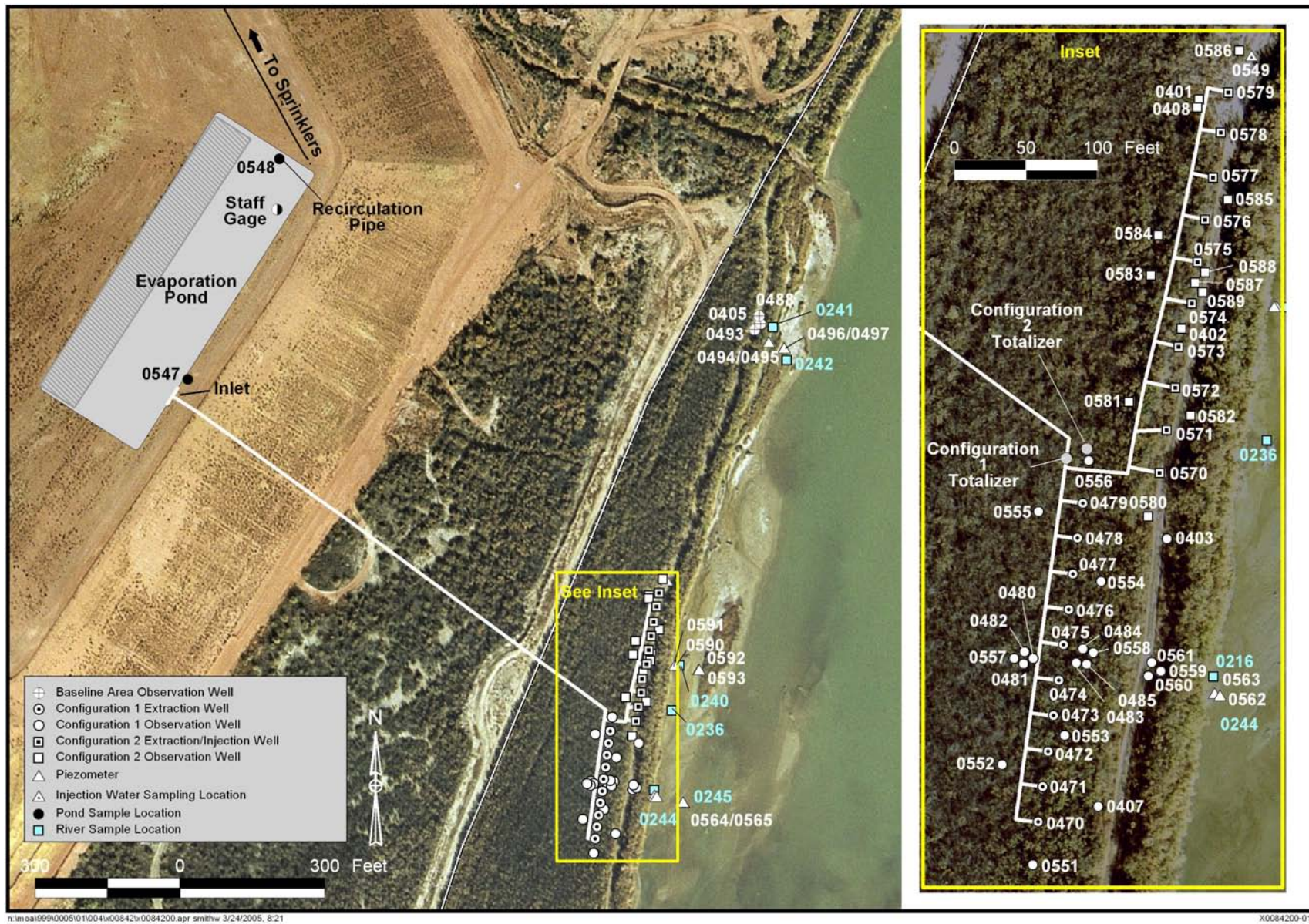
Sampling and analysis was conducted in accordance with the *Operations, Maintenance, and Performance Monitoring Plan for the Interim Action Ground Water Treatment System, February 2004*. Ground water samples were collected from 10 extraction wells (0470-0479), 6 observation wells (0403, 0407, 0483, 0557, 0559, and 0560), 4 piezometers (0562-0565), and 3 surface water locations (0216, 0547, and 0548), which are the Colorado River sample locations, evaporation pond inlet, and the evaporation pond re-circulation pump discharge, respectively. Including one duplicate and one equipment blank, a total of 25 samples were collected.

Time versus concentration graphs for selected wells and analytes are included.


Kenneth E. Karp
Site Lead

3-25-05
Date

Sample Location Map



Sample Locations at the Interim Action Well Field and Baseline Area (may include locations not sampled)

Data Assessment Summary

Water Sampling Field Activities Verification Checklist

Project	Moab, Utah	Date(s) of Water Sampling	December 15 - 16, 2004
Date(s) of Verification	February 25, 2005	Name of Verifier	Jeff Price

	Response (Yes, No, NA)	Comments
1. Is the SAP the primary document directing field procedures?	Yes	
List other documents, SOP's, instructions.	NA	
2. Were the sampling locations specified in the planning documents sampled?	Yes	
3. Was a pre-trip calibration conducted as specified in the above named documents?	Yes	
4. Was an operational check of the field equipment conducted twice daily?	Yes	
Did the operational checks meet criteria?	Yes	
5. Were the number and types (alkalinity, temperature, Ec, pH, turbidity, DO, ORP) of field measurements taken as specified?	Yes	
6. Was the Category of the well documented?	Yes	
7. Were the following conditions met when purging a Category I well:		
Was one pump/tubing volume purged prior to sampling?	Yes	
Did the water level stabilize prior to sampling?	Yes	
Did pH, specific conductance, and turbidity measurements stabilize prior to sampling?	Yes	
Was the flow rate less than 500 mL/min?	Yes	
If a portable pump was used, was there a 4 hour delay between pump installation and sampling?	NA	

Water Sampling Field Activities Verification Checklist (continued)

	Response (Yes, No, NA)	Comments
8. Were the following conditions met when purging a Category II well:		
Was the flow rate less than 500 mL/min?	Yes	
Was one pump/tubing volume removed prior to sampling?	Yes	
9. Were duplicates taken at a frequency of one per 20 samples?	No	Project management decision to collect one.
10. Were equipment blanks taken at a frequency of one per 20 samples that were collected with nondedicated equipment?	Yes	
11. Were trip blanks prepared and included with each shipment of VOC samples?	NA	
12. Were QC samples assigned a fictitious site identification number?	Yes	
Was the true identity of the samples recorded on the Quality Assurance Sample Log?	Yes	
13. Were samples collected in the containers specified?	Yes	
14. Were samples filtered and preserved as specified?	Yes	
15. Were the number and types of samples collected as specified?	Yes	
16. Were chain of custody records completed and was sample custody maintained?	Yes	
17. Are field data sheets signed and dated by both team members?	Yes	
18. Was all other pertinent information documented on the field data sheets?	Yes	
19. Was the presence or absence of ice in the cooler documented at every sample location?	Yes	
20. Were water levels measured at the locations specified in the planning documents?	Yes	

Laboratory Performance Assessment

General Information

Requisition No.: 04120141
Sample Event: December 15 and 16, 2004
Site(s): Moab, Utah
Laboratory: Paragon Analytics
Work Order No.: 0412177
Analysis: Metals and inorganics
Validator: Jeff Price/Steve Donivan
Review Date: February 25, 2005

This validation was performed according to the *Environmental Procedures Catalog* (STO 6), “Standard Practice for Validation of Laboratory Data”, GT-9(P) (2004). All analyses were successfully completed. The samples were prepared and analyzed using accepted procedures based on methods specified by line item code, which are listed in Table 1.

Table 1. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
Uranium, U	GJO-01	SW-846 3005A	SW-846 6020
Chloride, Cl	MIS-A-039	SW-846 9056	SW-846 9056
Sulfate, SO ₄	MIS-A-044	SW-846 9056	SW-846 9056
Ammonia as N, NH ₃ -N	WCH-A-005	MCAWW 350.1	MCAWW 350.1
Total Dissolved Solids, TDS	WCH-A-033	MCAWW 160.1	MCAWW 160.1

Data Qualifier Summary

The uranium result for samples 0412177-23 and 0412177-25 are qualified as “U” because the associated calibration blank result is greater than the method detection limit (MDL) and the sample result is less than five times the blank result.

Table 2. Data Qualifiers

Sample Number	Location	Analyte	Flag	Reason
0412177-23	0565	Uranium	U	Less than 5 times the blank
0412177-25	2730	Uranium	U	Less than 5 times the blank

Sample Shipping/Receiving

Paragon Analytics in Fort Collins, Colorado, received 25 samples on December 18, 2004, accompanied by a Chain of Custody (COC) form. The COC form was checked to confirm that all

of the samples were listed on the form and that signatures and dates were present indicating sample relinquishment and receipt. The sample submittal documents including the COC form, the sample submittal form, and the sample tickets had no errors or omissions.

Preservation and Holding Times

The sample shipment was received cool and intact with the temperature within the cooler of 2.6 °C, which complies with requirements. All samples had been preserved correctly for the requested analyses with the following exception. The bottles from locations 0562, 0563, 0564, and 0565 were submitted unfiltered and unpreserved because of the low volume available. The laboratory filtered and preserved the samples upon receipt, as instructed. Sufficient time elapsed between the pH adjustment and the sample analysis to allow equilibrium. All samples were analyzed within the applicable holding times.

Laboratory Instrument Calibration

All laboratory instrument calibrations were performed correctly in accordance with the cited methods.

Method SW-846 6020

Calibration for uranium was performed on December 23, 2004. The initial calibration was performed using four calibration standards resulting in a correlation coefficient (r^2) value greater than 0.995. The absolute value of the intercept was less than three times the MDL. Calibration and laboratory spike standards were prepared from independent sources. Initial and continuing calibration verification (CCV) checks were made at the required frequency resulting in 6 CCVs. All calibration checks met the acceptance criteria. A reporting limit verification check was made at the required frequency to verify the linearity of the calibration curve near the practical quantitation limit. The check result was within the acceptance criteria range. The mass calibration and resolution was checked at the beginning of each analytical run and was in accordance with the procedure. Internal standard recoveries were stable and within acceptable ranges.

Method SW-846 9056

Calibrations for chloride and sulfate were performed using five calibration standards each on December 20-21, 2004. The r^2 values were greater than 0.995 and intercepts were less than three times the MDL. Initial calibration and calibration check standards were prepared from independent sources. Initial and CCV checks were made at the required frequency resulting in 11 CCVs that met the acceptance criteria.

Method MCAWW 350.1

The initial calibration for ammonia as N was performed using six calibration standards on December 29, 2004, resulting in a r^2 value greater than 0.995. Initial and CCV checks were made at the required frequency resulting in seven CCVs that were within the acceptance criteria.

Method MCAWW 160.1

There is no initial or continuing calibration requirement associated with the determination of total dissolved solids (TDS).

Method and Calibration Blanks

The method blanks and initial and continuing calibration blanks (CCB) for method SW-846 6020 were below the practical quantitation limits. Samples 0565 and 2730 had uranium results that are less than five times the concentration of the associated continuing calibration blank and are qualified as “U.”

The method blanks for all inorganic analytes were below the MDL. All initial and CCB were below the MDL with the exception of CCB5, CCB6, and CCB7 analyzed for chloride on December 20, 2004. The samples associated with these CCBs were reanalyzed with acceptable results.

Inductively Coupled Plasma Interference Check Sample Analysis

Inductively coupled plasma interference check samples were analyzed at the required frequency and all results met the acceptance criteria.

Matrix Spike Analysis

Two matrix spike and matrix spike duplicate (MS/MSD) pairs for method SW-846 6020 were analyzed for uranium with acceptable results. MS/MSD pairs were analyzed for chloride, sulfate, and ammonia as N with acceptable results.

Laboratory Replicate Analysis

The relative percent difference (RPD) value for the MSD sample results for uranium was less than 20 percent. The RPD values for the MSD and laboratory duplicate sample results for chloride, sulfate, ammonia as N, and TDS were less than 20 percent.

Laboratory Control Sample

Laboratory control samples were analyzed at the correct frequency with acceptable results for all analysis categories.

Metals Serial Dilution

Serial dilutions were performed during the uranium analysis to monitor physical or chemical interferences that may exist in the sample matrix. The results did not meet the acceptance criteria. The interference check sample data and the matrix spike sample data did not indicate the presence of any matrix interferences. The failure of the serial dilutions is attributed to the large dilution factors that were used resulting in instrument readings that were near the practical quantitation limit.

Detection Limits/Dilutions

Samples were diluted in a consistent and acceptable manner when required. The samples were diluted prior to analysis of uranium to reduce interferences. The required detection limits were achieved for all analytes.

Completeness

Results were reported in the correct units for all analytes requested using contract-required laboratory qualifiers.

Chromatography Peak Integration

The integration of analyte peaks was reviewed for all ion chromatography data. The manual integrations that were performed were acceptable and all peak integrations were satisfactory.

Electronic Data Deliverable File

An electronic data deliverable (EDD) file arrived on January 3, 2005. The EDD validation application identified no problems with the file.

Field Analyses/Activities

The following information summarizes the field analyses and activities for this sampling event period.

Field Activities

All monitor well results were qualified with an “F” flag in the database indicating the wells were purged and sampled using the low-flow sampling method. Extraction wells are not sampled using the low-flow sampling method.

An equipment blank was collected and analyzed for the same constituents as the Moab environmental samples. Concentrations measured in the equipment blank were below their respective contract required detection limits; therefore, equipment blank results are considered acceptable. A duplicate sample was collected from well 0557. There are no established regulatory criteria for the evaluation of field duplicate samples; therefore, U.S. Environmental Protection Agency (EPA) guidance for laboratory duplicates (which is conservative for field duplicates) was used to assess the precision of the field duplicates. Duplicate results met the laboratory duplicate criteria of +/- 20 RPD and are considered acceptable.

Certification

Results were reported in correct units for all analytes requested. Appropriate contract-required laboratory qualifiers and target analyte lists were used. The required detection limits were met when possible or an explanation of why they were not met was given in the laboratory case narrative. All analytical quality control criteria were met except as qualified on the Ground Water Quality Data by Parameter, Surface Water Quality by Parameter, or equipment/trip blank database printouts. The meaning of data qualifiers is defined on the database printouts or defined in the EPA Contract Laboratory Program Statement of Work for Inorganic Analysis, Multi-Media Multi-Concentration, Document Number ILMO2.0, 1991. All data in this package are considered validated and may be treated as final results.

Laboratory Validation Lead: Steve Donovan 4-7-2005
Steve Donovan Date

Field Activities Validation Lead: Jeff Price 4/7/05
Jeff Price Date

Attachment 1
Data Presentation

Minimums and Maximums Report

Minimums and Maximums Report

The Minimums and Maximums Report is generated by a data validation application (DataVal) used to query the SEEPPro database. The DataVal compares the new data set with historical data and lists all new data that fall outside the historical data range. Values listed in the report are further screened using the following criteria. Results are not considered anomalous if (1) identified low concentrations are the result of low detection limits; (2) the concentration detected is within 50 percent of historical minimum or maximum values; (3) there were fewer than 5 historical samples for comparison.

Ammonia, chloride, sulfate, TDS, and uranium results for surface location 216 are the only anomalous values identified this sampling event. Location 216 is a water sample collected from the Colorado River downgradient near the center of the Configuration 1 well field. The sample was collected near the west bank in relatively shallow water. Historically, concentrations vary considerably at this location reflecting river dynamics and the effects of Configuration 1 extraction wells. The anomalously high values observed this sampling event will be monitored by comparing to other rounds.

SAMPLING DATA VALIDATION MINIMUMS AND MAXIMUMS REPORT -- No Field Parameters

LAB CODE: PAR, PARAGON (Fort Collins, CO)

LAB REQUISITION(S): 04120141

HISTORY BEGIN DATE: comparing to all historical data

REPORT DATE: 02/25/05 08:49:17: AM

SITE CODE	LOCATION CODE	SAMPLE DATE	ANALYTE	CURRENT			HISTORICAL MAXIMUM			HISTORICAL MINIMUM			COUNT	
				RESULT	QUALIFIERS LAB DATA		RESULT	QUALIFIERS LAB DATA		RESULT	QUALIFIERS LAB DATA		N	N BELOW DETECT
MOA01	0216	12/15/2004	Ammonia Total as N	140			13			0.14			5	0
MOA01	0216	12/15/2004	Chloride	610			140			54			5	0
MOA01	0216	12/15/2004	Sulfate	2700			470			170			5	0
MOA01	0216	12/15/2004	Total Dissolved Solids	5100			1100			470			5	0
MOA01	0216	12/15/2004	Uranium	0.84			0.08			0.0051			5	0
MOA01	0403	12/16/2004	Ammonia Total as N	38	F		930			69	F		11	0
MOA01	0403	12/16/2004	Chloride	190	F		6973.2			300	F		11	0
MOA01	0403	12/16/2004	Sulfate	440	F		18802.3			630	F		11	0
MOA01	0403	12/16/2004	Total Dissolved Solids	1100	F		19000	F		1500	F		10	0
MOA01	0403	12/16/2004	Uranium	0.12	F		3.392			0.2	F		11	0
MOA01	0407	12/15/2004	Uranium	0.15	F		4.6316			0.18	F		12	0
MOA01	0471	12/16/2004	Chloride	9200			9100			1800	F		14	0
MOA01	0473	12/16/2004	Sulfate	6800			10000	F		7300			14	0
MOA01	0474	12/16/2004	Sulfate	7200			9950			7700			16	0
MOA01	0475	12/16/2004	Ammonia Total as N	500			1100	F		570	F		14	0
MOA01	0475	12/16/2004	Sulfate	5100			10000	F		6500			14	0
MOA01	0475	12/16/2004	Total Dissolved Solids	12000			25000	F		14000	F		14	0
MOA01	0475	12/16/2004	Uranium	1.9			3.2	F		2.1			14	0
MOA01	0476	12/16/2004	Ammonia Total as N	410			1100	F		530			14	0
MOA01	0476	12/16/2004	Chloride	1900			7400	F		2000	F		14	0
MOA01	0476	12/16/2004	Sulfate	4500			9900			5300			14	0

SAMPLING DATA VALIDATION MINIMUMS AND MAXIMUMS REPORT -- No Field Parameters
 LAB CODE: PAR, PARAGON (Fort Collins, CO)
 LAB REQUISITION(S): 04120141
 HISTORY BEGIN DATE: comparing to all historical data
 REPORT DATE: 02/25/05 08:49:17: AM

SITE CODE	LOCATION CODE	SAMPLE DATE	ANALYTE	CURRENT		HISTORICAL MAXIMUM		HISTORICAL MINIMUM		COUNT	
				RESULT	QUALIFIERS LAB DATA	RESULT	QUALIFIERS LAB DATA	RESULT	QUALIFIERS LAB DATA	N	N BELOW DETECT
MOA01	0476	12/16/2004	Total Dissolved Solids	9300		24000	F	12000		14	0
MOA01	0476	12/16/2004	Uranium	1.5		3.3	F	1.8		14	0
MOA01	0477	12/16/2004	Ammonia Total as N	410		1200	F	500		14	0
MOA01	0477	12/16/2004	Chloride	2000		9000	F	2100	F	14	0
MOA01	0477	12/16/2004	Sulfate	4700		9800	F	5400		14	0
MOA01	0477	12/16/2004	Total Dissolved Solids	9900		26000	F	10000	F	14	0
MOA01	0477	12/16/2004	Uranium	1.6		3.2	F	2		14	0
MOA01	0478	12/16/2004	Ammonia Total as N	550		1400	F	570		14	0
MOA01	0478	12/16/2004	Sulfate	5400		11000	F	6000		14	0
MOA01	0478	12/16/2004	Total Dissolved Solids	13000		32000	F	14740		14	0
MOA01	0479	12/16/2004	Ammonia Total as N	440		1400	F	590		14	0
MOA01	0479	12/16/2004	Sulfate	3600		10800		5300		14	0
MOA01	0479	12/16/2004	Total Dissolved Solids	9800		31000	F	14000	F	14	0
MOA01	0479	12/16/2004	Uranium	1.2		3.3	F	1.5		14	0
MOA01	0483	12/15/2004	Ammonia Total as N	520	F	1500	F	650	F	10	0
MOA01	0483	12/15/2004	Chloride	3700	F	13000	F	4700	F	10	0
MOA01	0483	12/15/2004	Sulfate	3700	F	11000	F	6100	F	10	0
MOA01	0483	12/15/2004	Total Dissolved Solids	11000	F	34000	F	16000	F	10	0
MOA01	0483	12/15/2004	Uranium	1.1	F	3.3	F	1.6	F	10	0
MOA01	0547	12/16/2004	Ammonia Total as N	680		950	J	700		6	0
MOA01	0547	12/16/2004	Sulfate	6300		9400		6700		6	0
MOA01	0547	12/16/2004	Total Dissolved Solids	17000		21000		18000		6	0

SAMPLING DATA VALIDATION MINIMUMS AND MAXIMUMS REPORT -- No Field Parameters

LAB CODE: PAR, PARAGON (Fort Collins, CO)

LAB REQUISITION(S): 04120141

HISTORY BEGIN DATE: comparing to all historical data

REPORT DATE: 02/25/05 08:49:17: AM

SITE CODE	LOCATION CODE	SAMPLE DATE	ANALYTE	CURRENT		HISTORICAL MAXIMUM		HISTORICAL MINIMUM		COUNT	
				RESULT	QUALIFIERS LAB DATA	RESULT	QUALIFIERS LAB DATA	RESULT	QUALIFIERS LAB DATA	N	N BELOW DETECT
MOA01	0548	12/16/2004	Ammonia Total as N	720		1400		810		7	0
MOA01	0548	12/16/2004	Total Dissolved Solids	21000		44000		24000		7	0
MOA01	0557	12/16/2004	Uranium	2.7	F	3.1	F	2.9	F	5	0
MOA01	0557	12/16/2004	Uranium	2.7	F	3.1	F	2.9	F	5	0
MOA01	0559	12/15/2004	Ammonia Total as N	280	F	800	F	430	F	6	0
MOA01	0559	12/15/2004	Chloride	1600	F	6300	F	2600	F	6	0
MOA01	0559	12/15/2004	Sulfate	2800	F	8100	F	3600	F	6	0
MOA01	0559	12/15/2004	Total Dissolved Solids	6500	F	22000	F	11000	F	6	0
MOA01	0559	12/15/2004	Uranium	0.91	F	2.4	F	0.95	JF	6	0
MOA01	0560	12/15/2004	Ammonia Total as N	2000	F	1900	F	1200	F	5	0
MOA01	0560	12/15/2004	Sulfate	8400	F	8300	F	7300	F	5	0

SAMPLING DATA VALIDATION MINIMUMS AND MAXIMUMS REPORT -- No Field Parameters

LAB CODE: PAR, PARAGON (Fort Collins, CO)

LAB REQUISITION(S): 04120141

HISTORY BEGIN DATE: comparing to all historical data

REPORT DATE: 02/25/05 08:49:17: AM

SITE CODE	LOCATION CODE	SAMPLE DATE	ANALYTE	CURRENT		HISTORICAL MAXIMUM		HISTORICAL MINIMUM		COUNT	
				RESULT	QUALIFIERS LAB DATA	RESULT	QUALIFIERS LAB DATA	RESULT	QUALIFIERS LAB DATA	N	N BELOW DETECT

SAMPLE ID CODES: 000X = Filtered sample (0.45 µm). N00X = Unfiltered sample. X = replicate number.

LAB QUALIFIERS:

- Replicate analysis not within control limits.
- + Correlation coefficient for MSA < 0.995.
- A TIC is a suspected aldol-condensation product.
- B Inorganic: Result is between the IDL and CRDL. Organic: Analyte also found in method blank.
- E Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
- Z Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- H Holding time expired, value suspect.
- I Increased detection limit due to required dilution.
- C Pesticide result confirmed by GC-MS.
- M GFAA duplicate injection precision not met.
- N Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compound (TIC).
- S Result determined by method of standard addition (MSA).
- U Analytical result below detection limit.
- W Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
- D Analyte determined in diluted sample.
- P > 25% difference in detected pesticide or Arochlor concentrations between 2 columns.
- X Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- Y Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- > Result above upper detection limit.
- J Estimated

DATA QUALIFIERS:

- | | | |
|--|--|---|
| J Estimated value. | F Low flow sampling method used. | G Possible grout contamination, pH > 9. |
| L Less than 3 bore volumes purged prior to sampling. | R Unusable result. | X Location is undefined. |
| U Parameter analyzed for but was not detected. | Q Qualitative result due to sampling technique | |

Anomalous Data Review Checksheet

Anomalous Data Review Checksheet

Site: Moab Processing Site Sampling Date: December 15 - 16, 2004

Reviewer: Jeff Price J.E. Price 3/24/15
Name Signature Date

Site Lead: Kenneth Karp Kenneth Karp 3-24-05
Name Signature Date

Loc. No.	Analyte	Type of Anomaly	Disposition
<u>0216</u>	<u>Ammonia as N</u>	<u>High</u>	<u>Compare to other rounds</u>
<u>0216</u>	<u>Chloride</u>	<u>High</u>	<u>Compare to other rounds</u>
<u>0216</u>	<u>Sulfate</u>	<u>High</u>	<u>Compare to other rounds</u>
<u>0216</u>	<u>TDS</u>	<u>High</u>	<u>Compare to other rounds</u>
<u>0216</u>	<u>Uranium</u>	<u>High</u>	<u>Compare to other rounds</u>

Water Quality Data

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 2/25/2005 10:37 am

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Alkalinity, Total (As CaCO3	mg/L	0216	SL, RIV	12/15/2004	0001	0.17 - 0.17	426		#	-
	mg/L	0403	WL	12/16/2004	0001	18.00 - 18.00	216	F	#	-
	mg/L	0407	WL	12/15/2004	0001	17.00 - 17.00	202	F	#	-
	mg/L	0470	WL, EXT	12/16/2004	0001	10.30 - 19.70	720		#	-
	mg/L	0471	WL, EXT	12/16/2004	0001	10.30 - 19.70	726		#	-
	mg/L	0472	WL, EXT	12/16/2004	0001	10.30 - 19.70	780		#	-
	mg/L	0473	WL, EXT	12/16/2004	0001	10.30 - 19.70	810		#	-
	mg/L	0474	WL, EXT	12/16/2004	0001	10.30 - 19.70	774		#	-
	mg/L	0475	WL, EXT	12/16/2004	0001	10.30 - 19.70	662		#	-
	mg/L	0476	WL, EXT	12/16/2004	0001	10.30 - 19.70	614		#	-
	mg/L	0477	WL, EXT	12/16/2004	0001	10.30 - 19.70	620		#	-
	mg/L	0478	WL, EXT	12/16/2004	0001	9.60 - 23.90	640		#	-
	mg/L	0483	WL	12/15/2004	0001	18.00 - 18.00	546	F	#	-
	mg/L	0547	TS, INFL	12/16/2004	0001	0.00 - 0.00	662		#	-
	mg/L	0548	TS, EPND	12/16/2004	0001	0.00 - 0.00	524		#	-
	mg/L	0557	WL	12/16/2004	0001	40.00 - 40.00	800	F	#	-
	mg/L	0559	WL	12/15/2004	0001	19.50 - 19.50	214	F	#	-
	mg/L	0560	WL	12/15/2004	0001	31.00 - 31.00	480	F	#	-
Ammonia Total as N	mg/L	0216	SL, RIV	12/15/2004	0001	0.17 - 0.17	140		#	5
	mg/L	0403	WL	12/16/2004	0001	18.00 - 18.00	38	F	#	1
	mg/L	0407	WL	12/15/2004	0001	17.00 - 17.00	37	F	#	1
	mg/L	0470	WL, EXT	12/16/2004	0001	10.30 - 19.70	700		#	50
	mg/L	0471	WL, EXT	12/16/2004	0001	10.30 - 19.70	910		#	50
	mg/L	0472	WL, EXT	12/16/2004	0001	10.30 - 19.70	840		#	50
	mg/L	0473	WL, EXT	12/16/2004	0001	10.30 - 19.70	700		#	50
	mg/L	0474	WL, EXT	12/16/2004	0001	10.30 - 19.70	760		#	50

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 2/25/2005 10:37 am

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY	
Ammonia Total as N	mg/L	0475	WL, EXT	12/16/2004	0001	10.30 - 19.70	500		#	50	-
	mg/L	0476	WL, EXT	12/16/2004	0001	10.30 - 19.70	410		#	50	-
	mg/L	0477	WL, EXT	12/16/2004	0001	10.30 - 19.70	410		#	50	-
	mg/L	0478	WL, EXT	12/16/2004	0001	9.60 - 23.90	550		#	50	-
	mg/L	0479	WL, EXT	12/16/2004	0001	9.30 - 23.60	440		#	50	-
	mg/L	0483	WL	12/15/2004	0001	18.00 - 18.00	520	F	#	50	-
	mg/L	0547	TS, INFL	12/16/2004	0001	0.00 - 0.00	680		#	50	-
	mg/L	0548	TS, EPND	12/16/2004	0001	0.00 - 0.00	720		#	50	-
	mg/L	0557	WL	12/16/2004	0001	40.00 - 40.00	1300	F	#	50	-
	mg/L	0557	WL	12/16/2004	0002	40.00 - 40.00	1300	F	#	50	-
	mg/L	0559	WL	12/15/2004	0001	19.50 - 19.50	280	F	#	50	-
	mg/L	0560	WL	12/15/2004	0001	31.00 - 31.00	2000	F	#	50	-
	mg/L	0563	WL, PZ	12/16/2004	0001	3.95 - 3.95	81	FQ	#	5	-
	mg/L	0564	WL, PZ	12/16/2004	0001	1.32 - 1.32	0.8	FQ	#	0.1	-
	mg/L	0565	WL, PZ	12/16/2004	0001	4.32 - 4.32	39	FQ	#	1	-
Chloride	mg/L	0216	SL, RIV	12/15/2004	0001	0.17 - 0.17	610		#	20	-
	mg/L	0403	WL	12/16/2004	0001	18.00 - 18.00	190	F	#	4	-
	mg/L	0407	WL	12/15/2004	0001	17.00 - 17.00	200	F	#	4	-
	mg/L	0470	WL, EXT	12/16/2004	0001	10.30 - 19.70	6700		#	100	-
	mg/L	0471	WL, EXT	12/16/2004	0001	10.30 - 19.70	9200		#	100	-
	mg/L	0472	WL, EXT	12/16/2004	0001	10.30 - 19.70	6600		#	100	-
	mg/L	0473	WL, EXT	12/16/2004	0001	10.30 - 19.70	3300		#	40	-
	mg/L	0474	WL, EXT	12/16/2004	0001	10.30 - 19.70	5000		#	100	-
	mg/L	0475	WL, EXT	12/16/2004	0001	10.30 - 19.70	2700		#	40	-
	mg/L	0476	WL, EXT	12/16/2004	0001	10.30 - 19.70	1900		#	40	-
	mg/L	0477	WL, EXT	12/16/2004	0001	10.30 - 19.70	2000		#	40	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 2/25/2005 10:37 am

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY	
Chloride	mg/L	0478	WL, EXT	12/16/2004	0001	9.60 - 23.90	3400		#	40	-
	mg/L	0479	WL, EXT	12/16/2004	0001	9.30 - 23.60	3100		#	40	-
	mg/L	0483	WL	12/15/2004	0001	18.00 - 18.00	3700	F	#	40	-
	mg/L	0547	TS, INFL	12/16/2004	0001	0.00 - 0.00	5100		#	100	-
	mg/L	0548	TS, EPND	12/16/2004	0001	0.00 - 0.00	6900		#	100	-
	mg/L	0557	WL	12/16/2004	0001	40.00 - 40.00	12000	F	#	200	-
	mg/L	0557	WL	12/16/2004	0002	40.00 - 40.00	12000	F	#	200	-
	mg/L	0559	WL	12/15/2004	0001	19.50 - 19.50	1600	F	#	40	-
	mg/L	0560	WL	12/15/2004	0001	31.00 - 31.00	39000	F	#	1000	-
	mg/L	0562	WL, PZ	12/16/2004	0001	1.53 - 1.53	550	FQ	#	20	-
	mg/L	0563	WL, PZ	12/16/2004	0001	3.95 - 3.95	670	FQ	#	20	-
	mg/L	0564	WL, PZ	12/16/2004	0001	1.32 - 1.32	130	FQ	#	4	-
	mg/L	0565	WL, PZ	12/16/2004	0001	4.32 - 4.32	290	FQ	#	10	-
Oxidation Reduction Potent	mV	0216	SL, RIV	12/15/2004	N001	0.17 - 0.17	166		#	-	-
	mV	0244	SL, RIV	12/15/2004	N001	0.08 - 0.08	177		#	-	-
	mV	0245	SL, RIV	12/15/2004	N001	0.25 - 0.25	132		#	-	-
	mV	0403	WL	12/16/2004	N001	18.00 - 18.00	81	F	#	-	-
	mV	0407	WL	12/15/2004	N001	17.00 - 17.00	-84	F	#	-	-
	mV	0470	WL, EXT	12/16/2004	N001	10.30 - 19.70	148		#	-	-
	mV	0471	WL, EXT	12/16/2004	N001	10.30 - 19.70	140		#	-	-
	mV	0472	WL, EXT	12/16/2004	N001	10.30 - 19.70	131		#	-	-
	mV	0473	WL, EXT	12/16/2004	N001	10.30 - 19.70	114		#	-	-
	mV	0474	WL, EXT	12/16/2004	N001	10.30 - 19.70	113		#	-	-
	mV	0475	WL, EXT	12/16/2004	N001	10.30 - 19.70	105		#	-	-
	mV	0476	WL, EXT	12/16/2004	N001	10.30 - 19.70	119		#	-	-
	mV	0477	WL, EXT	12/16/2004	N001	10.30 - 19.70	110		#	-	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 2/25/2005 10:37 am

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Oxidation Reduction Potent	mV	0478	WL, EXT	12/16/2004	N001	9.60 - 23.90	115		#	-
	mV	0479	WL, EXT	12/16/2004	N001	9.30 - 23.60	110		#	-
	mV	0483	WL	12/15/2004	N001	18.00 - 18.00	33	F	#	-
	mV	0557	WL	12/16/2004	N001	40.00 - 40.00	126	F	#	-
	mV	0559	WL	12/15/2004	N001	19.50 - 19.50	31	F	#	-
	mV	0560	WL	12/15/2004	N001	31.00 - 31.00	85	F	#	-
	mV	0562	WL, PZ	12/15/2004	N001	1.53 - 1.53	166	FQ	#	-
	mV	0563	WL, PZ	12/15/2004	N001	3.95 - 3.95	132	FQ	#	-
	mV	0564	WL, PZ	12/15/2004	N001	1.32 - 1.32	151	FQ	#	-
	mV	0565	WL, PZ	12/15/2004	N001	4.32 - 4.32	135	FQ	#	-
pH	s.u.	0216	SL, RIV	12/15/2004	N001	0.17 - 0.17	8.00		#	-
	s.u.	0244	SL, RIV	12/15/2004	N001	0.08 - 0.08	7.68		#	-
	s.u.	0245	SL, RIV	12/15/2004	N001	0.25 - 0.25	8.53		#	-
	s.u.	0403	WL	12/16/2004	N001	18.00 - 18.00	7.60	F	#	-
	s.u.	0407	WL	12/15/2004	N001	17.00 - 17.00	7.73	F	#	-
	s.u.	0470	WL, EXT	12/16/2004	N001	10.30 - 19.70	6.96		#	-
	s.u.	0471	WL, EXT	12/16/2004	N001	10.30 - 19.70	6.88		#	-
	s.u.	0472	WL, EXT	12/16/2004	N001	10.30 - 19.70	6.88		#	-
	s.u.	0473	WL, EXT	12/16/2004	N001	10.30 - 19.70	6.91		#	-
	s.u.	0474	WL, EXT	12/16/2004	N001	10.30 - 19.70	6.87		#	-
	s.u.	0475	WL, EXT	12/16/2004	N001	10.30 - 19.70	6.91		#	-
	s.u.	0476	WL, EXT	12/16/2004	N001	10.30 - 19.70	6.95		#	-
	s.u.	0477	WL, EXT	12/16/2004	N001	10.30 - 19.70	6.88		#	-
	s.u.	0478	WL, EXT	12/16/2004	N001	9.60 - 23.90	6.88		#	-
	s.u.	0479	WL, EXT	12/16/2004	N001	9.30 - 23.60	7.00		#	-
	s.u.	0483	WL	12/15/2004	N001	18.00 - 18.00	7.24	F	#	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 2/25/2005 10:37 am

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
pH	s.u.	0547	TS, INFL	12/16/2004	N001	0.00 - 0.00	6.64		#	-
	s.u.	0548	TS, EPND	12/16/2004	N001	0.00 - 0.00	7.68		#	-
	s.u.	0557	WL	12/16/2004	N001	40.00 - 40.00	6.84	F	#	-
	s.u.	0559	WL	12/15/2004	N001	19.50 - 19.50	7.31	F	#	-
	s.u.	0560	WL	12/15/2004	N001	31.00 - 31.00	6.66	F	#	-
	s.u.	0562	WL, PZ	12/15/2004	N001	1.53 - 1.53	6.32	FQ	#	-
	s.u.	0563	WL, PZ	12/15/2004	N001	3.95 - 3.95	8.07	FQ	#	-
	s.u.	0564	WL, PZ	12/15/2004	N001	1.32 - 1.32	7.81	FQ	#	-
	s.u.	0565	WL, PZ	12/15/2004	N001	4.32 - 4.32	8.97	FQ	#	-
Specific Conductance	umhos/cm	0216	SL, RIV	12/15/2004	N001	0.17 - 0.17	7437		#	-
	umhos/cm	0244	SL, RIV	12/15/2004	N001	0.08 - 0.08	7320		#	-
	umhos/cm	0245	SL, RIV	12/15/2004	N001	0.25 - 0.25	1437		#	-
	umhos/cm	0403	WL	12/16/2004	N001	18.00 - 18.00	2063	F	#	-
	umhos/cm	0407	WL	12/15/2004	N001	17.00 - 17.00	1908	F	#	-
	umhos/cm	0470	WL, EXT	12/16/2004	N001	10.30 - 19.70	29935		#	-
	umhos/cm	0471	WL, EXT	12/16/2004	N001	10.30 - 19.70	36333		#	-
	umhos/cm	0472	WL, EXT	12/16/2004	N001	10.30 - 19.70	30235		#	-
	umhos/cm	0473	WL, EXT	12/16/2004	N001	10.30 - 19.70	26030		#	-
	umhos/cm	0474	WL, EXT	12/16/2004	N001	10.30 - 19.70	25975		#	-
	umhos/cm	0475	WL, EXT	12/16/2004	N001	10.30 - 19.70	17288		#	-
	umhos/cm	0476	WL, EXT	12/16/2004	N001	10.30 - 19.70	14365		#	-
	umhos/cm	0477	WL, EXT	12/16/2004	N001	10.30 - 19.70	14845		#	-
	umhos/cm	0478	WL, EXT	12/16/2004	N001	9.60 - 23.90	19370		#	-
	umhos/cm	0479	WL, EXT	12/16/2004	N001	9.30 - 23.60	16105		#	-
	umhos/cm	0483	WL	12/15/2004	N001	18.00 - 18.00	19484	F	#	-
	umhos/cm	0547	TS, INFL	12/16/2004	N001	0.00 - 0.00	24520		#	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 2/25/2005 10:37 am

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Specific Conductance	umhos/cm	0548	TS, EPND	12/16/2004	N001	0.00 - 0.00	30410		#	-
	umhos/cm	0557	WL	12/16/2004	N001	40.00 - 40.00	45630	F	#	-
	umhos/cm	0559	WL	12/15/2004	N001	19.50 - 19.50	10828	F	#	-
	umhos/cm	0560	WL	12/15/2004	N001	31.00 - 31.00	101765	F	#	-
	umhos/cm	0562	WL, PZ	12/15/2004	N001	1.53 - 1.53	2769	FQ	#	-
	umhos/cm	0563	WL, PZ	12/15/2004	N001	3.95 - 3.95	2436	FQ	#	-
	umhos/cm	0564	WL, PZ	12/15/2004	N001	1.32 - 1.32	1036	FQ	#	-
	umhos/cm	0565	WL, PZ	12/15/2004	N001	4.32 - 4.32	3044	FQ	#	-
Sulfate	mg/L	0216	SL, RIV	12/15/2004	0001	0.17 - 0.17	2700		#	50
	mg/L	0403	WL	12/16/2004	0001	18.00 - 18.00	440	F	#	10
	mg/L	0407	WL	12/15/2004	0001	17.00 - 17.00	390	F	#	10
	mg/L	0470	WL, EXT	12/16/2004	0001	10.30 - 19.70	7600		#	250
	mg/L	0471	WL, EXT	12/16/2004	0001	10.30 - 19.70	8300		#	250
	mg/L	0472	WL, EXT	12/16/2004	0001	10.30 - 19.70	7800		#	250
	mg/L	0473	WL, EXT	12/16/2004	0001	10.30 - 19.70	6800		#	100
	mg/L	0474	WL, EXT	12/16/2004	0001	10.30 - 19.70	7200		#	100
	mg/L	0475	WL, EXT	12/16/2004	0001	10.30 - 19.70	5100		#	100
	mg/L	0476	WL, EXT	12/16/2004	0001	10.30 - 19.70	4500		#	100
	mg/L	0477	WL, EXT	12/16/2004	0001	10.30 - 19.70	4700		#	100
	mg/L	0478	WL, EXT	12/16/2004	0001	9.60 - 23.90	5400		#	100
	mg/L	0479	WL, EXT	12/16/2004	0001	9.30 - 23.60	3600		#	100
	mg/L	0483	WL	12/15/2004	0001	18.00 - 18.00	3700	F	#	100
	mg/L	0547	TS, INFL	12/16/2004	0001	0.00 - 0.00	6300		#	100
	mg/L	0548	TS, EPND	12/16/2004	0001	0.00 - 0.00	8900		#	250
	mg/L	0557	WL	12/16/2004	0001	40.00 - 40.00	9900	F	#	250
	mg/L	0557	WL	12/16/2004	0002	40.00 - 40.00	10000	F	#	250

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 2/25/2005 10:37 am

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Sulfate	mg/L	0559	WL	12/15/2004	0001	19.50 - 19.50	2800	F #	100	-
	mg/L	0560	WL	12/15/2004	0001	31.00 - 31.00	8400	F #	500	-
	mg/L	0562	WL, PZ	12/16/2004	0001	1.53 - 1.53	2300	FQ #	50	-
	mg/L	0563	WL, PZ	12/16/2004	0001	3.95 - 3.95	2800	FQ #	50	-
	mg/L	0564	WL, PZ	12/16/2004	0001	1.32 - 1.32	310	FQ #	10	-
	mg/L	0565	WL, PZ	12/16/2004	0001	4.32 - 4.32	510	FQ #	25	-
Temperature	C	0216	SL, RIV	12/15/2004	N001	0.17 - 0.17	13.01	#	-	-
	C	0244	SL, RIV	12/15/2004	N001	0.08 - 0.08	11.11	#	-	-
	C	0245	SL, RIV	12/15/2004	N001	0.25 - 0.25	9.51	#	-	-
	C	0403	WL	12/16/2004	N001	18.00 - 18.00	11.05	F #	-	-
	C	0407	WL	12/15/2004	N001	17.00 - 17.00	15.81	F #	-	-
	C	0470	WL, EXT	12/16/2004	N001	10.30 - 19.70	15.42	#	-	-
	C	0471	WL, EXT	12/16/2004	N001	10.30 - 19.70	16.18	#	-	-
	C	0472	WL, EXT	12/16/2004	N001	10.30 - 19.70	15.07	#	-	-
	C	0473	WL, EXT	12/16/2004	N001	10.30 - 19.70	16.35	#	-	-
	C	0474	WL, EXT	12/16/2004	N001	10.30 - 19.70	16.01	#	-	-
	C	0475	WL, EXT	12/16/2004	N001	10.30 - 19.70	14.86	#	-	-
	C	0476	WL, EXT	12/16/2004	N001	10.30 - 19.70	16.44	#	-	-
	C	0477	WL, EXT	12/16/2004	N001	10.30 - 19.70	16.30	#	-	-
	C	0478	WL, EXT	12/16/2004	N001	9.60 - 23.90	16.76	#	-	-
	C	0479	WL, EXT	12/16/2004	N001	9.30 - 23.60	16.19	#	-	-
	C	0483	WL	12/15/2004	N001	18.00 - 18.00	15.42	F #	-	-
	C	0547	TS, INFL	12/16/2004	N001	0.00 - 0.00	15.24	#	-	-
	C	0548	TS, EPND	12/16/2004	N001	0.00 - 0.00	5.94	#	-	-
	C	0557	WL	12/16/2004	N001	40.00 - 40.00	14.12	F #	-	-
	C	0559	WL	12/15/2004	N001	19.50 - 19.50	15.20	F #	-	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 2/25/2005 10:37 am

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Temperature	C	0560	WL	12/15/2004	N001	31.00 - 31.00	13.63	F #	-	-
	C	0562	WL, PZ	12/15/2004	N001	1.53 - 1.53	11.1	FQ #	-	-
	C	0563	WL, PZ	12/15/2004	N001	3.95 - 3.95	7.27	FQ #	-	-
	C	0564	WL, PZ	12/15/2004	N001	1.32 - 1.32	7.93	FQ #	-	-
	C	0565	WL, PZ	12/15/2004	N001	4.32 - 4.32	5.74	FQ #	-	-
Total Dissolved Solids	mg/L	0216	SL, RIV	12/15/2004	0001	0.17 - 0.17	5100	#	200	-
	mg/L	0403	WL	12/16/2004	0001	18.00 - 18.00	1100	F #	40	-
	mg/L	0407	WL	12/15/2004	0001	17.00 - 17.00	950	F #	40	-
	mg/L	0470	WL, EXT	12/16/2004	0001	10.30 - 19.70	20000	#	400	-
	mg/L	0471	WL, EXT	12/16/2004	0001	10.30 - 19.70	24000	#	1000	-
	mg/L	0472	WL, EXT	12/16/2004	0001	10.30 - 19.70	20000	#	400	-
	mg/L	0473	WL, EXT	12/16/2004	0001	10.30 - 19.70	15000	#	400	-
	mg/L	0474	WL, EXT	12/16/2004	0001	10.30 - 19.70	18000	#	400	-
	mg/L	0475	WL, EXT	12/16/2004	0001	10.30 - 19.70	12000	#	400	-
	mg/L	0476	WL, EXT	12/16/2004	0001	10.30 - 19.70	9300	#	400	-
	mg/L	0477	WL, EXT	12/16/2004	0001	10.30 - 19.70	9900	#	400	-
	mg/L	0478	WL, EXT	12/16/2004	0001	9.60 - 23.90	13000	#	400	-
	mg/L	0479	WL, EXT	12/16/2004	0001	9.30 - 23.60	9800	#	400	-
	mg/L	0483	WL	12/15/2004	0001	18.00 - 18.00	11000	F #	400	-
	mg/L	0547	TS, INFL	12/16/2004	0001	0.00 - 0.00	17000	#	400	-
	mg/L	0548	TS, EPND	12/16/2004	0001	0.00 - 0.00	21000	#	400	-
	mg/L	0557	WL	12/16/2004	0001	40.00 - 40.00	30000	F #	1000	-
	mg/L	0557	WL	12/16/2004	0002	40.00 - 40.00	30000	F #	1000	-
	mg/L	0559	WL	12/15/2004	0001	19.50 - 19.50	6500	F #	400	-
	mg/L	0560	WL	12/15/2004	0001	31.00 - 31.00	68000	F #	2000	-
	mg/L	0562	WL, PZ	12/16/2004	0001	1.53 - 1.53	4300	FQ #	80	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 2/25/2005 10:37 am

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Total Dissolved Solids	mg/L	0563	WL, PZ	12/16/2004	0001	3.95 - 3.95	5500	FQ #	200	-
	mg/L	0564	WL, PZ	12/16/2004	0001	1.32 - 1.32	800	FQ #	80	-
	mg/L	0565	WL, PZ	12/16/2004	0001	4.32 - 4.32	1400	FQ #	40	-
Turbidity	NTU	0216	SL, RIV	12/15/2004	N001	0.17 - 0.17	122	#	-	-
	NTU	0403	WL	12/16/2004	N001	18.00 - 18.00	5.46	F #	-	-
	NTU	0407	WL	12/15/2004	N001	17.00 - 17.00	4.86	F #	-	-
	NTU	0470	WL, EXT	12/16/2004	N001	10.30 - 19.70	12.8	#	-	-
	NTU	0471	WL, EXT	12/16/2004	N001	10.30 - 19.70	4.49	#	-	-
	NTU	0472	WL, EXT	12/16/2004	N001	10.30 - 19.70	10.3	#	-	-
	NTU	0473	WL, EXT	12/16/2004	N001	10.30 - 19.70	2.30	#	-	-
	NTU	0474	WL, EXT	12/16/2004	N001	10.30 - 19.70	2.69	#	-	-
	NTU	0475	WL, EXT	12/16/2004	N001	10.30 - 19.70	5.97	#	-	-
	NTU	0476	WL, EXT	12/16/2004	N001	10.30 - 19.70	3.50	#	-	-
	NTU	0477	WL, EXT	12/16/2004	N001	10.30 - 19.70	0.73	#	-	-
	NTU	0478	WL, EXT	12/16/2004	N001	9.60 - 23.90	4.03	#	-	-
	NTU	0479	WL, EXT	12/16/2004	N001	9.30 - 23.60	0.82	#	-	-
	NTU	0483	WL	12/15/2004	N001	18.00 - 18.00	1.49	F #	-	-
	NTU	0547	TS, INFL	12/16/2004	N001	0.00 - 0.00	0.28	#	-	-
	NTU	0548	TS, EPND	12/16/2004	N001	0.00 - 0.00	7.44	#	-	-
	NTU	0557	WL	12/16/2004	N001	40.00 - 40.00	4.39	F #	-	-
	NTU	0559	WL	12/15/2004	N001	19.50 - 19.50	5.10	F #	-	-
	NTU	0560	WL	12/15/2004	N001	31.00 - 31.00	1.94	F #	-	-
	NTU	0562	WL, PZ	12/15/2004	N001	1.53 - 1.53	113	FQ #	-	-
	NTU	0563	WL, PZ	12/15/2004	N001	3.95 - 3.95	1000	> FQ #	-	-
	NTU	0564	WL, PZ	12/15/2004	N001	1.32 - 1.32	1000	> FQ #	-	-
	NTU	0565	WL, PZ	12/15/2004	N001	4.32 - 4.32	1000	> FQ #	-	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 2/25/2005 10:37 am

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN- CERTAINTY	
Uranium	mg/L	0216	SL, RIV	12/15/2004	0001	0.17 - 0.17	0.840		#	0.00083	-
	mg/L	0403	WL	12/16/2004	0001	18.00 - 18.00	0.120	F	#	4.2E-05	-
	mg/L	0407	WL	12/15/2004	0001	17.00 - 17.00	0.150	F	#	4.2E-05	-
	mg/L	0470	WL, EXT	12/16/2004	0001	10.30 - 19.70	2.500	E	#	0.00083	-
	mg/L	0471	WL, EXT	12/16/2004	0001	10.30 - 19.70	2.500		#	0.00083	-
	mg/L	0472	WL, EXT	12/16/2004	0001	10.30 - 19.70	2.700		#	0.00083	-
	mg/L	0473	WL, EXT	12/16/2004	0001	10.30 - 19.70	2.600		#	0.00083	-
	mg/L	0474	WL, EXT	12/16/2004	0001	10.30 - 19.70	2.500		#	0.00083	-
	mg/L	0475	WL, EXT	12/16/2004	0001	10.30 - 19.70	1.900		#	0.00083	-
	mg/L	0476	WL, EXT	12/16/2004	0001	10.30 - 19.70	1.500		#	0.00083	-
	mg/L	0477	WL, EXT	12/16/2004	0001	10.30 - 19.70	1.600		#	0.00083	-
	mg/L	0478	WL, EXT	12/16/2004	0001	9.60 - 23.90	2.000		#	0.00083	-
	mg/L	0479	WL, EXT	12/16/2004	0001	9.30 - 23.60	1.200		#	0.00083	-
	mg/L	0483	WL	12/15/2004	0001	18.00 - 18.00	1.100	F	#	0.00083	-
	mg/L	0547	TS, INFL	12/16/2004	0001	0.00 - 0.00	2.200		#	0.00083	-
	mg/L	0548	TS, EPND	12/16/2004	0001	0.00 - 0.00	2.700		#	0.00083	-
	mg/L	0557	WL	12/16/2004	0001	40.00 - 40.00	2.700	F	#	0.00083	-
	mg/L	0557	WL	12/16/2004	0002	40.00 - 40.00	2.700	F	#	0.00083	-
	mg/L	0559	WL	12/15/2004	0001	19.50 - 19.50	0.910	F	#	0.00083	-
	mg/L	0560	WL	12/15/2004	0001	31.00 - 31.00	1.300	E F	#	0.00083	-
	mg/L	0563	WL, PZ	12/16/2004	0001	3.95 - 3.95	0.045	FQ	#	4.2E-05	-
	mg/L	0565	WL, PZ	12/16/2004	0001	4.32 - 4.32	0.00021	UFQ	#	8.3E-06	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
 REPORT DATE: 2/25/2005 10:37 am

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN- CERTAINTY
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RECORDS: SELECTED FROM USEE200 WHERE site_code='MOA01' AND quality_assurance = TRUE AND (data_validation_qualifiers IS NULL OR data_validation_qualifiers NOT LIKE '%R%' AND data_validation_qualifiers NOT LIKE '%X%') AND DATE_SAMPLED between #12/15/2004# and #12/16/2004#

SAMPLE ID CODES: 000X = Filtered sample (0.45 µm). N00X = Unfiltered sample. X = replicate number.

LOCATION TYPES: SL SURFACE LOCATION

TS TREATMENT SYSTEM

WL WELL

LOCATION SUBTYPES: EPND Evaporation Pond
RIV River

EXT Extraction Well

INFL Treatment System Influent

PZ Piezometer

LAB QUALIFIERS:

- * Replicate analysis not within control limits.
- + Correlation coefficient for MSA < 0.995.
- > Result above upper detection limit.
- A TIC is a suspected aldol-condensation product.
- B Inorganic: Result is between the IDL and CRDL. Organic: Analyte also found in method blank.
- C Pesticide result confirmed by GC-MS.
- D Analyte determined in diluted sample.
- E Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
- H Holding time expired, value suspect.
- I Increased detection limit due to required dilution.
- J Estimated
- M GFAA duplicate injection precision not met.
- N Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compound (TIC).
- P > 25% difference in detected pesticide or Arochlor concentrations between 2 columns.
- S Result determined by method of standard addition (MSA).
- U Analytical result below detection limit.
- W Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
- X Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- Y Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- Z Laboratory defined (USEPA CLP organic) qualifier, see case narrative.

DATA QUALIFIERS:

- | | | |
|--|--|--------------------|
| F Low flow sampling method used. | G Possible grout contamination, pH > 9. | J Estimated value. |
| L Less than 3 bore volumes purged prior to sampling. | Q Qualitative result due to sampling technique | R Unusable result. |
| U Parameter analyzed for but was not detected. | X Location is undefined. | |

QA QUALIFIER: # = validated according to Quality Assurance guidelines.

BLANKS REPORT

LAB CODE: PAR, PARAGON (Fort Collins, CO)

LAB REQUISITION(S): 04120141

REPORT DATE: 02/25/05 10:39:48: AM

PARAMETER	SITE CODE	LOCATION ID	SAMPLE DATE	ID	UNITS	RESULT	QUALIFIERS LAB DATA	DETECTION LIMIT	UNCERTAINTY	SAMPLE TYPE
Ammonia Total as N	MOA01	0999	12/17/2004	0001	mg/L	0.1	U	0.1		E
Chloride	MOA01	0999	12/17/2004	0001	mg/L	0.2	U	0.2		E
Sulfate	MOA01	0999	12/17/2004	0001	mg/L	0.87		0.5		E
Total Dissolved Solids	MOA01	0999	12/17/2004	0001	mg/L	20	U	20		E
Uranium	MOA01	0999	12/17/2004	0001	mg/L	0.000051	B U	0.0000083		E

Water Level Data

STATIC WATER LEVELS (USEE700) FOR SITE MOA01, Moab Site
REPORT DATE: 2/25/2005 10:37 am

LOCATION CODE	FLOW CODE	TOP OF CASING ELEVATION (FT)	MEASUREMENT		DEPTH FROM TOP OF CASING (FT)	WATER ELEVATION (FT)	WATER LEVEL FLAG
			DATE	TIME			
0402	O	3968.63	12/16/2004	16:31	15.26	3953.37	
0403	O	3968.95	12/16/2004	11:57	16.61	3952.34	
0407	O	3969.09	12/15/2004	15:35	17.65	3951.44	
0470		3968.49	12/16/2004	08:39	19.64	3948.85	
0471		3968.83	12/16/2004	08:52	20.31	3948.52	
0472		3968.81	12/16/2004	09:07	19.42	3949.39	
0473		3969.05	12/16/2004	09:23	20.86	3948.19	
0474		3969.22	12/16/2004	09:35	18.49	3950.73	
0475		3969.46	12/16/2004	09:50	19.75	3949.71	
0476		3969.48	12/16/2004	10:05	20.22	3949.26	
0477		3969.40	12/16/2004	10:17	18.23	3951.17	
0478		3969.49	12/16/2004	10:32	19.42	3950.07	
0479		3969.27	12/16/2004	10:47	19.09	3950.18	
0483		3968.90	12/15/2004	16:04	17.40	3951.50	
0547		-	12/16/2004	13:00	7.25	-7.25	
0548		-	12/16/2004	13:05	7.25	-	
0557		3968.85	12/16/2004	11:17	15.94	3952.91	
0559		3969.92	12/15/2004	16:31	17.91	3952.01	
0560		3968.77	12/15/2004	17:03	16.55	3952.22	
0562		3956.29	12/15/2004	12:29	4.05	3952.24	
0563		3955.05	12/15/2004	12:44	3.12	3951.93	
0564		3956.39	12/15/2004	12:58	4.10	3952.29	
0565		3954.05	12/15/2004	13:09	2.25	3951.80	
0580		3969.32	12/16/2004	15:14	16.99	3952.33	
0581		3969.02	12/16/2004	16:02	15.98	3953.04	
0582		3969.65	12/16/2004	15:35	16.42	3953.23	
0583		3969.64	12/16/2004	17:01	16.17	3953.47	
0587		3968.89	12/16/2004	16:51	15.37	3953.52	
0590		3956.70	12/15/2004	14:00	3.61	3953.09	
0591		3953.99	12/15/2004	14:03	1.11	3952.88	

STATIC WATER LEVELS (USEE700) FOR SITE MOA01, Moab Site
REPORT DATE: 2/25/2005 10:37 am

LOCATION CODE	FLOW CODE	TOP OF CASING ELEVATION (FT)	MEASUREMENT		DEPTH FROM TOP OF CASING (FT)	WATER ELEVATION (FT)	WATER LEVEL FLAG
			DATE	TIME			
0592		3956.36	12/15/2004	14:26	3.53	3952.83	
0593		3954.90	12/15/2004	14:31	1.75	3953.15	

RECORDS: SELECTED FROM USEE700 WHERE site_code='MOA01' AND LOG_DATE between #12/15/2004# and #12/16/2004#

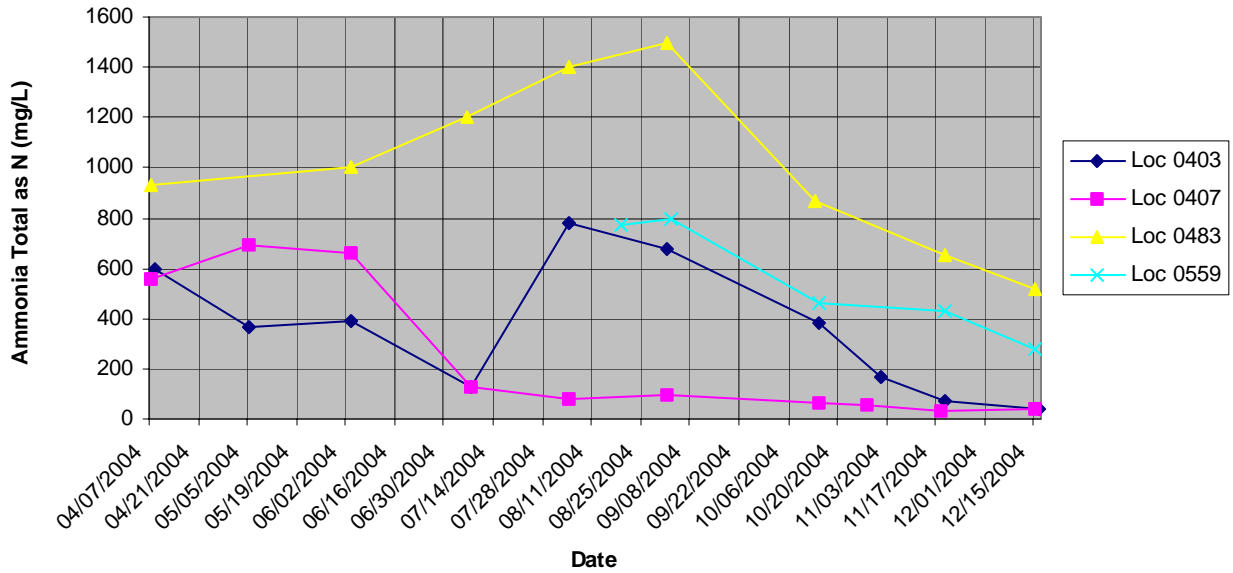
FLOW CODES: O ON-SITE

WATER LEVEL FLAGS:

Time Versus Concentration Graphs

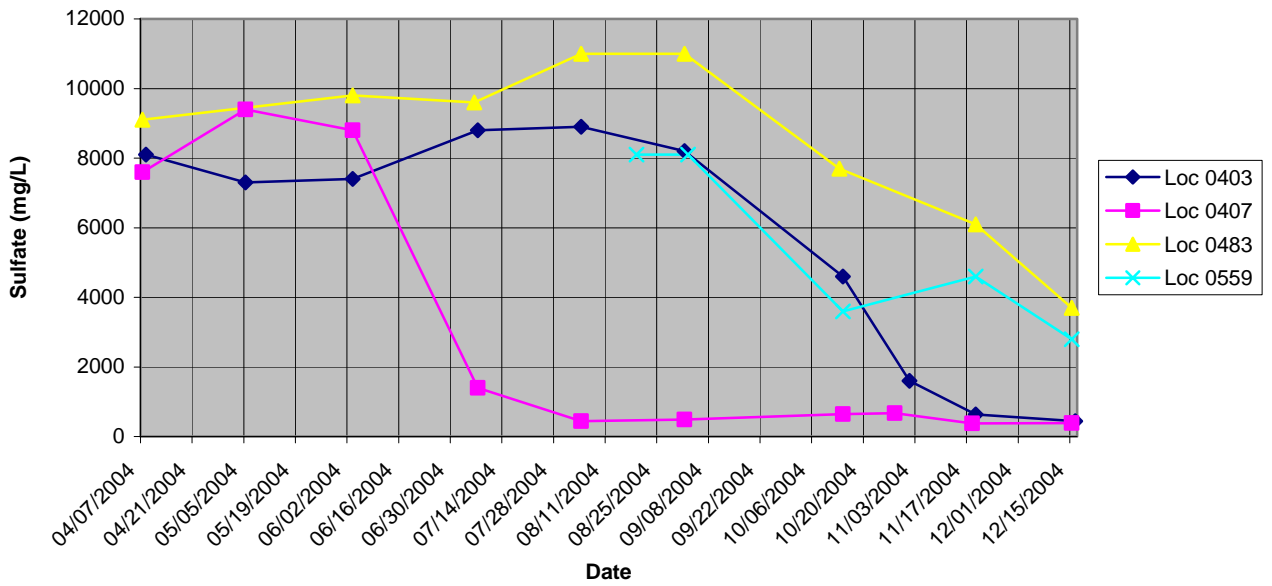
Moab Site (MOA01)

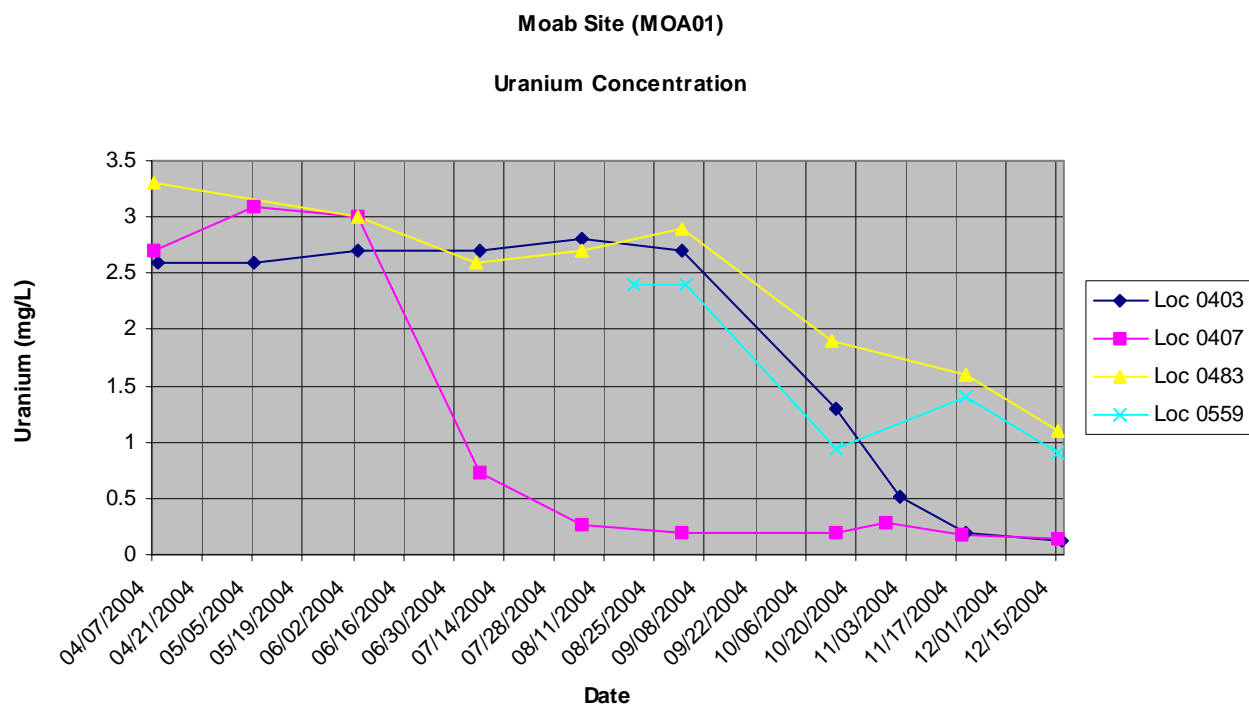
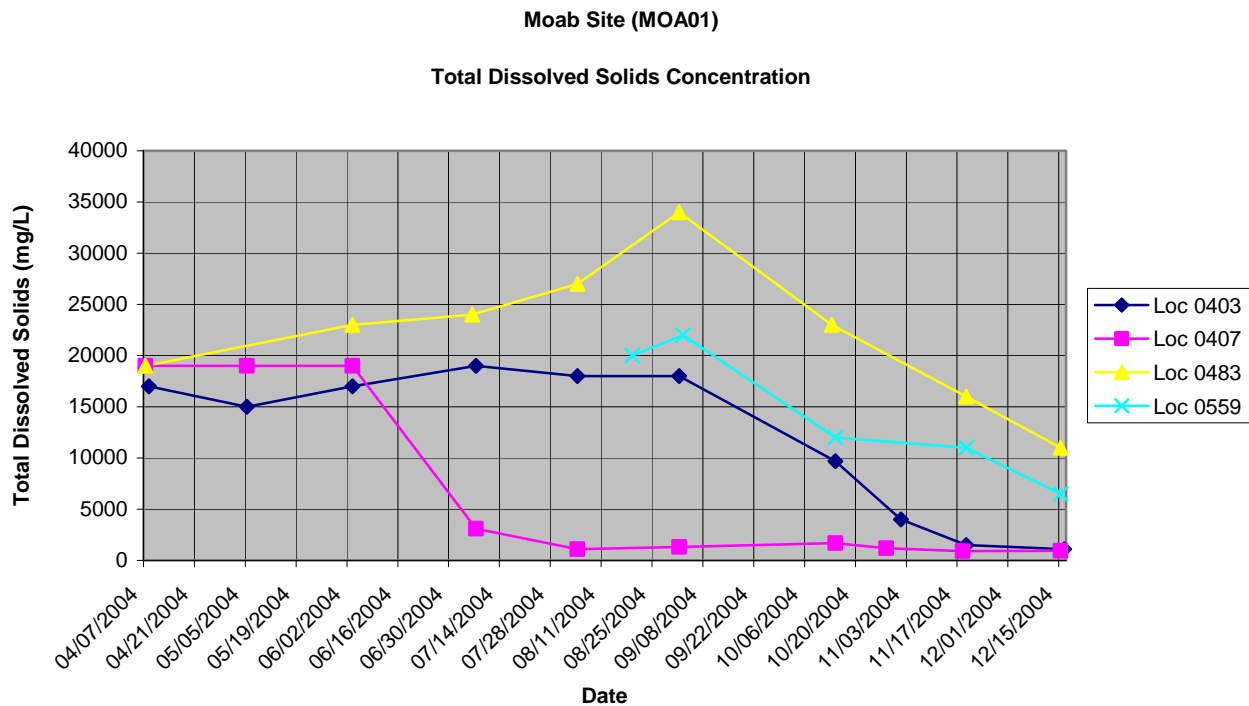
Ammonia Total as N Concentration



Moab Site (MOA01)

Sulfate Concentration





Attachment 2
Trip Report



established 1959

DATE: January 12, 2005

TO: Ken Karp

FROM: K. G. Pill

SUBJECT: Trip Report

Site: Moab – I.A. Configuration I Extraction Well Field Monthly Sampling – December 2004 –
REVISED

Date of Sampling Event: December 15 and 16, 2004.

Team Members: Ken Pill and Tim Bartlett.

Number of Locations Sampled: 10 extraction wells (0470 through 0479), 6 observation wells (0403, 0407, 0483, 0557, 0559, and 0560), 4 piezometers (0562 through 0565) and 3 surface water locations (0216, 0547, and 0548). Including one duplicate and one equipment blank, a total of **25** samples were collected.

Locations in Which Field Parameters Were Measured Only: Field parameters were measured from 2 surface water locations (0244 and 0245). Samples were not submitted to Paragon for laboratory analysis from these locations.

Locations Not Sampled/Reason: None.

Field Variance: Only a 125 ml sample was collected for uranium analysis as opposed to the standard 500 ml sample volume. Limited sample volumes collected from piezometers 0562 through 0565 were not filtered in the field, and not preserved beyond 4 °C. This variance was discussed with Steve Donivan prior to submitting the samples.

Quality Control Sample Cross Reference: Following are the false identifications assigned to the quality control samples:

FALSE ID	TRUE ID	SAMPLE TYPE	ASSOCIATED MATRIX	TICKET NUMBER
2729	0557	Duplicate	Ground water	NDY-271
2730	NA	Equipment Blank	Water	NDY-291

RIN Number Assigned: All samples were assigned to RIN **04120141**.

Sample Shipment: All samples were shipped (in one cooler) overnight FEDEX to Paragon Analytics, Inc. from Moab, Utah, on December 17, 2004 (Airbill No. 8473 2967 6580).

Location Specific Information – Extraction Wells: Each extraction well was sampled using dedicated submersible pumps. Extraction well water levels and pumping rates (gpm) for each extraction well prior to sampling occurred are provided in the table below:

Well No.	Date	Time	Water Level (ft btoc)	Pumping Rate (gpm)
0470	12/16/04	08:40	19.64	3.88
0471	12/16/04	08:54	20.31	3.13
0472	12/16/04	09:10	19.42	2.57
0473	12/16/04	09:27	20.86	2.84
0474	12/16/04	09:39	18.49	0.96
0475	12/16/04	09:55	19.75	1.64
0476	12/16/04	10:10	20.22	1.62
0477	12/16/04	10:25	18.23	0.51
0478	12/16/04	10:36	19.42	2.17
0479	12/16/04	10:52	19.09	1.65

Location Specific Information – Observation Wells: All Observation wells were sampled using micro-purge techniques with a peristaltic pump and downhole tubing. Sample depths and water levels for each observation well are listed below. **Note the sample depths are below ground surface.**

Well No.	Date	Time	Depth to Water (ft btoc)	Sample Depth (ft bgs)
0403	12/16/04	11:57	16.61	18
0407	12/15/04	15:35	17.65	17
0483	12/15/04	16:04	17.40	18
0557	12/16/04	11:17	15.94	40
0559	12/15/04	16:31	17.91	19.5
0560	12/15/04	17:03	16.55	31

Location Specific Information – Piezometers: Water levels were measured in piezometers 0562, 0563, 0564, and 0565. It was dry at the base at each location (photographs of each location are attached to this report). The data is provided below:

PZ No.	Date	Time	Depth to Water (ft btoc)
0562	12/15/04	12:29	4.05
0563	12/15/04	12:44	3.12
0564	12/15/04	12:58	4.10
0565	12/15/04	13:09	2.25

Limited sample volumes were collected from piezometer 0562, 0563, 0564, and 0565 (50, 250, 50, and 250 mls, respectively). In order to maximize the volume of water available for analysis, these samples were not filtered in the field and were not acid preserved.

Location Specific Information – Surface Water Sampling: Location 0216 was sampled approximately 10 ft to the north of the marked location in order to find a location deep enough to conduct sampling and sample water in contact with the base of the bank. A photo of this location is attached to this report. Sample depths associated with each surface water sample are provided below:

Location No.	Date	Time	Sample Depth (ft bws)
0216	12/15/04	13:20	0.17
0547	12/16/04	13:05	0
0548	12/16/04	13:10	0

Notes: ft bws = feet below water surface

The water level of the Evaporation Pond when 0547 and 0548
was sampled was 7.25 ft (based on the staff gauge)

Field parameters (only) were measured in the surface water adjacent to the piezometer locations. This information is provided below. These samples were not submitted for laboratory analysis.

Measurement Location	Surface Water Parameters						
	Date	Time	Temp (°C)	Specific Conductance (µS/cm)	pH	ORP	Sample Depth (ft bws)
0244	12/15/04	12:50	11.11	7320	7.68	177	0.08
0245	12/15/04	13:12	9.51	1437	8.53	132	0.25

Note: ft bws = feet below water surface

Well Inspection Summary: A well inspection was not conducted.

Equipment: All equipment functioned properly.

Site Issues: The extraction wells had been running since June 2004.

According to the USGS Cisco Gaging Station (Station No. 09180500), the mean daily Colorado River Flow on 12/15/04 was 2,830 cfs. The flow decreased to 2,770 cfs on 12/16/04.

Corrective Action Required/Taken: None.

(KGP/lcg)

cc: J. D. Berwick, DOE-EM (e)
D. R. Metzler, DOE-EM
C. I. Bahrke, Stoller (e)
L. E. Cummins, Stoller (e)
S. E. Donovan, Stoller (e)
K. E. Miller, Stoller
K. G. Pill, Stoller (e)
L. M. Wright, Stoller (e)
Working File, MOA



Sampling Piezometers 0562 and 0563



Piezometers 0564 and 0565



Sampling SW Location 0216